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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TANG, KENNETH

ART UNIT	PAPER NUMBER
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2127

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DATE MAILED: 03/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/328,828

Applicant(s)

GALPIN, SAMUEL

Examiner

Kenneth Tang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2.4.5</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-66 are presented for examination.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “A. executing a first sequence of instructions in any of a first process and first thread (collectively, "first process"), B. executing a second sequence of instructions in any of a second process and second thread (collectively, "second process"), the second process being loosely coupled with respect to the first process, C. comparing a state of the first process following completion by it of execution of the first instruction sequence with a state of the second process following completion by it of the second instruction sequence, and” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 7 and 53 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to the other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims 7 and 53 have not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The following claim languages are indefinite:

- a. In claims 1 and 10, the “other control device” and “other control system” are indefinite terms.
- b. In claims 3 and 16, 20, 36 the term “favorable” is indefinite.
- c. In claims 1, 10, 19, 27, 35, 41, 47, and 57, the terms “(collectively, “first process”)” and “(collectively, “second process”)” are indefinite. Claim language should be amended such that the parenthesis be removed.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-66 are rejected under 35 U.S.C. 101 because claims 1, 10, 19, 27, 35, 41, 47, and 57 are directed to method steps/control apparatus which can be practiced mentally in conjunction with pen and paper, therefore they are directed to non-statutory subject matter. Specifically, as claimed, it is uncertain what performs each of the claimed method steps. Moreover, each of the claimed steps, inter alia, executing a first sequence and second sequence

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and then comparing them, can be practiced mentally in conjunction with pen and paper. The claimed steps do not define a machine or computer implemented process [see MPEP 2106]. Therefore, the claimed invention is directed to non-statutory subject matter (The examiner suggests Applicant to change “method” to “computer implemented methods” and “control apparatus” to “computer control apparatus” in the preamble to overcome the outstanding 35 USC 101 rejection).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams (US 6,499,048 B1).

7. As to claims 1, 35, and 47, Williams teaches a method of operation of a control system, comprising

- A. executing a first sequence of instructions in any of a first process (*see claim 8*);
- B. executing a second sequence of instructions in any of a second process, the second process being loosely coupled with respect to the first process (*see claim 8, see Abstract*),

C. comparing a state of the first process following completion by it of execution of the first instruction sequence with a state of the second process following completion by it of the second instruction sequence (*col. 1, lines 23-30*), and

D. Wherein each of the first and second processes execute on any of a process control field device, a block controller, a process controller, a process control plant server, a process control enterprise server, an industrial control device, an industrial control system, an environmental control device, an environmental control system, other control device, and other control system (*see Fig. 3*).

8. Williams fails to explicitly teach that the processes are loosely coupled to each other. However, it is well known that two processes can be loosely coupled to each other. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of loosely coupled processes to the existing system because then the processes wouldn't have to share a common clock.

9. As to claims 2, 42, 44, 48, Williams teaches comprising the step of executing step (C) one or more times over a time interval in order to determine whether the first and second processes achieve comparable states following completion of execution of the first instruction sequence by the first process (*col. 1, lines 23-30*).

10. As to claims 3, 26, Williams teaches comprising the step responding to a favorable comparison in step (C) by repeating steps (A) - (C) with a third instruction sequence in place of

the first instruction sequence, and with a fourth instruction sequence in place of the second instruction sequence (*col. 3, lines 35-55*).

11. As to claim 4, Williams teaches a method according to claim 3, comprising the steps of selecting the third instruction sequence as a function of a state of the first process following execution of the first instruction sequence, and selecting the fourth instruction sequence as a function of a state of the second process following execution of the second instruction sequence (*col. 3, lines 35-55*).

12. As to claims 5, Williams teaches a method according to claim 4, comprising comparing a state of the first process prior to execution by it of the third instruction sequence with a state of the second process prior to execution by it of the fourth instruction sequence (*col. 3, lines 35-55*).

13. As to claim 6, Williams teaches wherein the comparison logic signals an error in response to a failure of the first and second processes to achieve comparable states at a time of comparison (*col. 13, lines 42-57*).

14. As to claim 7, Williams fails to explicitly teach wherein the scheduling logic responds to an error by rolling back each of the first and second processes to a prior states in which a favorable comparison was achieved. However, it is well known in the art of task management that processes can have the feature of rollback or two-phase commit, where the process completely finishes or else cancels out so that the effect is all or nothing. It would have been

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obvious to one of ordinary skill in the art at the time the invention was made to include a rollback feature to the process so that they will be complete or not existent.

15. As to claims 8, 11, 54, 58, Williams teaches a method according to claim 1, wherein step (C) comprises comparing any of registers, memory, flags, interrupts, tasks, and events in the respective processes (*col. 4, lines 28-32*).

16. As to claims 9, 18, 25, 33, 39, 45, 55, Williams teaches a method according to claim 1, wherein each of the first and second processes comprise any of a thread and a process, and wherein the first and second processes execute on any of the same and different digital data processing apparatus (*see the rejection of claim 1*). In addition, if the processes execute on either the same and different apparatuses, then they execute on any apparatus.

17. As to claims 10 and 57, it is rejected for the same reasons as stated in the rejection of claim 1. In addition, logic is used in the processes (*col. 9, lines 37-38*).

18. As to claim 12, it is rejected for the same reasons as stated in the rejections of 2 and 10.

19. As to claim 13, it is rejected for the same reasons as stated in the rejections of 4 and 10.

20. As to claim 14, it is rejected for the same reasons as stated in the rejections of 5 and 10.

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21. As to claim 15, Williams teaches wherein the comparison logic signals an error in response to a failure of the first and second processes to achieve comparable states at a time of comparison (*col. 13, lines 42-57*).

22. As to claims 16, Williams fails to explicitly teach wherein the scheduling logic responds to an error by rolling back each of the first and second processes to a prior states in which a favorable comparison was achieved. However, it is well known in the art of task management that processes can have the feature of rollback or two-phase commit, where the process completely finishes or else cancels out so that the effect is all or nothing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a rollback feature to the process so that they will be complete or not existent.

23. As to claim 17, it is rejected for the same reasons as stated in the rejection of claim 10.

24. As to claims 19 and 27, they are rejected for the same reasons as stated in the rejection of claims 1 and 10. In addition, Williams teaches that the monitor synchronizes the processing sets (*col. 4, lines 22-24*). Furthermore, Williams teaches subsequence instructions that make up instructions (*col. 5, lines 20-33*).

25. As to claims 20 and 21, they are rejected for the same reasons as stated in the rejections of claims 19, 2 and 3.

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26. As to claim 22, it is rejected for the same reasons as stated in the rejections of claims 15, 19, and 20.

27. As to claims 23, it is rejected for the same reasons as stated in the rejections of claims 19 and 2.

28. As to claim 24, it is rejected for the same reasons as stated in the rejections of claims 16.

29. As to claims 26, 34, 40, 56, 66, Williams teaches wherein each of the first and second processes execute on any of a process control field device, a block controller, a process controller, a process control plant server, and a process control enterprise server (*Fig. 3*).

30. As to claims 28, it is rejected for the same reasons as stated in the rejections of claims 2-4 and 27.

31. As to claims 29, it is rejected for the same reasons as stated in the rejection of claim 27. In addition, logic is used in the processes (*col. 9, lines 37-38*).

32. As to claims 30, it is rejected for the same reasons as stated in the rejections of claims 20.

33. As to claim 31, it is rejected for the same reasons as stated in the rejections of claim 15.

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34. As to claim 32, it is rejected for the same reasons as stated in the rejections of claim 16.
35. As to claim 35, it is rejected for the same reasons as stated in the rejection of claim 1.
36. As to claim 36, it is rejected for the same reasons as stated in the rejections of claim 3.
37. As to claim 37, it is rejected for the same reasons as stated in the rejections of claim 15.
38. As to claim 38, it is rejected for the same reasons as stated in the rejections of claim 2.
39. As to claim 41, it is rejected for the same reasons as stated in the rejections of claims 1 and 19.
40. As to claim 43, it is rejected for the same reasons as stated in the rejections of claims 2 and 41.
41. As to claim 46, it is rejected for the same reasons as stated in the rejections of claim 26.
42. As to claims 49-51, they are rejected for the same reasons as stated in the rejections of claims 2-5 and 47.
43. As to claim 52, it is rejected for the same reasons as stated in the rejections of claim 6.

44. As to claim 53, it is rejected for the same reasons as stated in the rejections of claim 7.

45. As to claim 59, it is rejected for the same reasons as stated in the rejections of claims 20 and 57.

46. As to claim 60, it is rejected for the same reasons as stated in the rejections of claims 2-5 and 57.

47. As to claim 61, it is rejected for the same reasons as stated in the rejections of claims 4-5 and 57.

48. As to claim 62, it is rejected for the same reasons as stated in the rejections of claim 15.

49. As to claim 63, it is rejected for the same reasons as stated in the rejections of claim 16.

50. As to claim 64, it is rejected for the same reasons as stated in the rejection of claim 57. In addition, logic is used in the processes (*col. 9, lines 37-38*).

51. As to claim 65, it is rejected for the same reasons as stated in the rejections of claim 9.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (703) 305-5334. The examiner can normally be reached on 8:30AM - 7:00PM, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kt
3/21/04


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